An Investigation of Consumer Acceptance of M-Banking in Australia

Abstract

Mobile phone banking (M-Banking) adoption around the world has been slow, and this has been perpetuated by the limited research that has been undertaken in the area. To address this gap, the study developed a model of antecedents to consumers' intention to use M-Banking using attitudinal theory as a framework. To test the model, a quantitative web-based survey was undertaken with 314 respondents. The findings show that perceived usefulness, compatibility, perceived risk, perceived cost and attitude are primary determinants of consumer acceptance of M-Banking in an Australian context. The research contributes to an enhanced understanding of the multiple antecedent beliefs to customer attitudes and usage intentions that must be considered when introducing technology into the service encounter.

Key words: mobile phone banking, technology acceptance, attitudinal theory

Introduction

Juniper Research (2009) predicts that the number of mobile phone banking (M-Banking) users will exceed 150 million globally by 2011. This, however, is in contrast with trends in M-Banking thus far with consumer uptake around the world falling below the expectations of both academics and industry specialists (Kleijnen, Wetzels and Ruyter, 2004; Riivari, 2005; Suoranta and Mattila, 2004). As such, there have been repeated calls for the investigation of factors that predict or explain the adoption, acceptance, and use of mobile services (M-Services) (i.e. Blechar, Constantiou and Damsgaard, 2006; Meso, Musa and Mbarika, 2005) such as M-Banking (Kim, Shin and Lee, 2007; Luarn and Lin, 2005; Laforet and Li, 2005). The call for additional research is particularly relevant in an Australian context given the recent launch of M-Banking by major Australian banks including Suncorp, ANZ, and Commonwealth Bank (McElligott, 2008; Osbourne, 2008; Sharma, 2008).

Literature Review

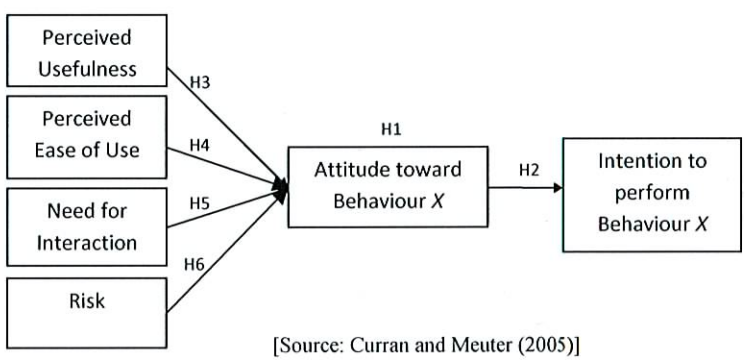
Mobile phone penetration in Australia is almost at saturation point according to a report by ACNielson (2009). This proliferation of mobile phone adoption, together with advances in mobile technology, has accelerated the development of M-Services (Wang, Lin and Luarn, 2006; Sullivan Mort and Drennan, 2007). M-Services are defined as "enhanced information services accessed while mobile" (Sullivan Mort and Drennan, 2007, p. 302). An emerging component of M-Services that could become a significant revenue source to both banks and telecom service providers is M-Banking (Nysveen, Pedersen and Thorbornsen, 2005). M-Banking involves conducting account balance and transaction history inquiries, funds transfers, bill payments, stock trades, portfolio management, as well as insurance ordering via a mobile device (Suoranta and Mattila, 2004). It provides value for consumers, above other banking channels, through ubiquitous access, time convenience, and mobility (Anckar and D'Incau, 2002; Lin & Luarn, 2005). Despite its many advantages, the use of mobile phones in banking services is still in its infancy and Internet banking retains its position as the leading channel in electronic banking (Laukkanen, 2007). The question therefore arises as to why consumers are not adopting M-Banking to the level predicted by academics and practitioners, and provides an opportunity for further research into this phenomenon.

There are a limited number of studies that use attitudinal theory to examine consumer acceptance of M-Banking separately from its associated technologies and services (e.g. Kim, Shin and Lee, 2007; Laforet and Li, 2005; Luarn and Lin, 2005). Each of these studies was conducted in a different country, with its own unique cultural characteristics (Hofstede, 2001), and were targeted at specific user groups i.e. banking customers (Luarn and Lin, 2005). Thus, continued research is needed to generalise findings to include other groups and countries (Kim, Shin and Lee, 2007; Luarn and Lin, 2005), especially since the influence of cultural and other socio-economic factors seem to be particularly evident when research deals with the adoption and diffusion of an innovation (Scott, 2002; La Ferle, Edwards and Mizuno, 2002). In response to this gap, this study aims to identify the key factors that explain and predict consumer acceptance of M-Banking within an Australian context.

RQ: What are the key motivators and inhibitors that influence consumers' attitude toward and intention to use M-Banking within an Australian context?

Secondly, there is a call for further research in terms of increasing the explanatory power of existing models through the addition of other relevant variables (Curran and Meuter, 2005; Kim, Shin and Lee, 2007; Laforet and Li, 2005; Luarn and Lin, 2005; Wang, Lin and Luarn, 2006). For instance, Curran and Meuter's (2005) SST Attitude/Intention to Use Model explains only half of the variation in attitude towards self-service technologies such as M-Banking. This model is particularly relevant since it has been applied to an entire range of self-service options in the retail banking, including: ATMs, phone banking, and Internet banking. Consequently, by extending its application to M-Banking, it is further validated in the retail banking industry. The Curran and Meuter (2005) model and its underlying hypotheses, which were adapted to this study, are provided below.

Figure 1: SST Attitude/Intention to Use Model



[Source: Curran and Meuter (2005)]

H_1: Attitude will mediate the relationship between the antecedent (independent) factors and intention to use M-Banking.
H_2: A positive attitude toward M-Banking will lead to an intention to utilise M-Banking.
H_3: Perceived usefulness will have a positive relationship, mediated by attitude toward M-Banking, with intention to use M-Banking.
H_4: Perceived ease of use will have a positive relationship, mediated by attitude toward M-Banking, with intention to use M-Banking.
H_5: The need for interaction with employees will have a negative relationship, mediated by attitude toward M-Banking, with intention to use M-Banking.
H_6: The perceived risk of using M-Banking will have a negative relationship, mediated by attitude toward M-Banking, with intention to use M-Banking.

An examination of current research in the area of M-Banking reveals that perceived cost, which is defined by Luarn and Lin (2005, p. 879) as the extent to which "a person believes that using M-Banking will cost money," has a significant negative effect on intention to use M-Banking and its related technologies (Luarn and Lin, 2005; Wang, Lin and Luarn, 2006). A similar construct, monetary sacrifice, has also been examined by Kim, Chan and Gupta (2007), who found that it negatively affects perceived value and thus, consumer intentions of mobile Internet adoption. Moreover, the cost of accessing mobile and wireless Internet has traditionally been higher than that of accessing wire-based Internet (Wang, Lin and Luarn, 2006). It is therefore hypothesised that financial considerations, including the cost of a web-enabled mobile phone and service and communication fees, will influence consumer intentions to use M-Banking.

H_7: Perceived cost will have a negative relationship, mediated by attitude toward M-Banking, with intention to use M-Banking.

An additional antecedent found to be significant in determining consumers' intention to use M-Services is compatibility (Wu and Wang, 2005). Compatibility is sourced from another cornerstone theoretical framework: Innovation Diffusion Theory (IDT) by Rogers (1962, 1983, 1995). It is defined in this context as the degree that engaging in M-Banking is perceived as being consistent with consumers' lifestyle and current needs (Wu and Wang, 2005; Kleijnen, de Ruyter and Wetzels, 2004). Research on mobile transaction services reveals that as many as two-thirds of the financial service transaction needs of respondents remain unfulfilled because traditional channels do not offer the ubiquity provided by a mobile channel (Hourahine and Howard, 2004, p. 234). Accordingly, it has been found that high compatibility leads to an increased chance of technology adoption (Wu and Wang, 2005; Chen, Lou and Luo, 2002) and raises the question as to whether this extends to M-Banking.

H_8: The compatibility of M-Banking with users' lifestyle and current needs will have a positive effect, mediated by attitude toward M-Banking, on intention to use M-Banking.

Research Design

A web-based survey, based on previously tested Likert scale items, was promoted though the dissemination of 3000 email invitations from which 314 responses were received. In addition, a total of 320 emails (10.6%) were returned without reaching the intended participant. Consequently, the response rate for this study is approximately 11.7% (314/2680). This is comparable to other studies that have utilised email invitations with no subsequent reminder emails (Cole, 2005; Tourangeau, Couper and Conrad 2004). Multiple regression analysis (MRA) was used to test this model of simple mediation (Preacher, Rucker and Hayes, 2007). Specifically, MRA was used to test Baron and Kenny (1986) conditions of mediation using the method prescribed by Cox (2006).

Findings and Discussion

The relationships between the independent variables (perceived usefulness, perceived ease of use, need for interaction, risk, perceived cost and compatibility), the mediator (attitude) and the dependent variable (intention to use) were investigated by examining their Pearson product-moment correlation coefficients. The first condition of mediation posed by Baron and Kenny (1986) was satisfied since all the independent variables (IVs) are significantly related to the dependent variable (DV) at the $p<.05$ (two-tailed) significance level (Refer to Table 1).

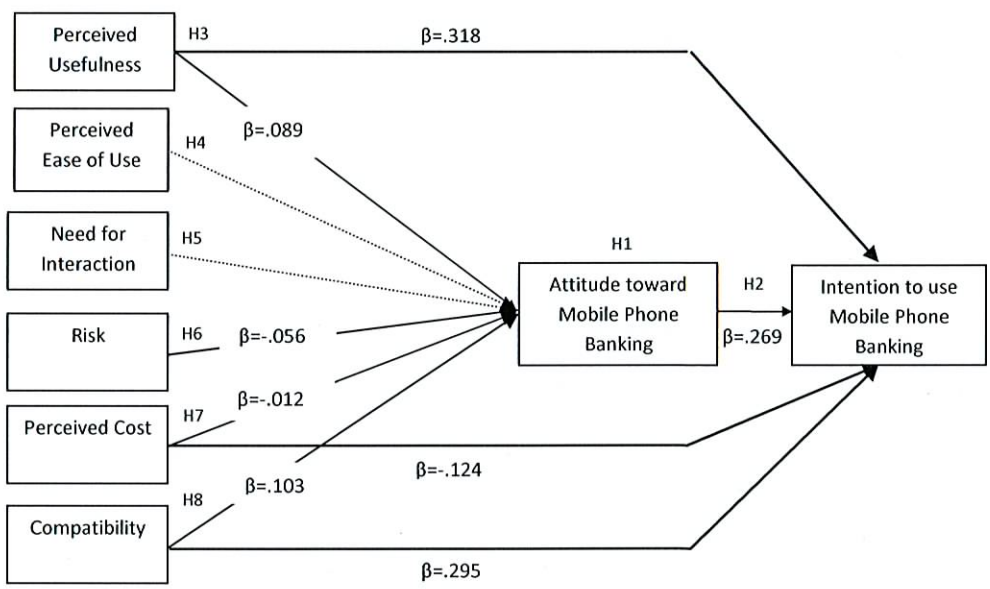
The IVs are also significantly related to the mediator (M), thereby satisfying the second condition of mediation proposed by Baron and Kenny (1986). Lastly, the third condition of mediation is also fulfilled since there is a significant relationship between the M and DV (r=.856, n=311, p<.05).

Table 1: Bivariate Correlations

		EOU	USE	InterACT	RISK	COST	ComPAT	ATT	INTENT
ATT	Pearson Correlation	.533**	.826**	-.253**	-.710**	-.417**	.852**	1.000	
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000		
INTENT	Pearson Correlation	.505**	.857**	-.268**	-.654**	-.478**	.867**	.856**	1.000
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	

To test the fourth condition, a two-step hierarchical regression analysis was conducted in order to test whether attitude (M) predicts intention to use (DV) in the presence of the IVs (Condition 4a) and whether the relationships between the IVs and intention to use (DV) reduce in magnitude, or go to zero in the presence of attitude (M) (Condition 4b). Figure 2 graphically summarises these findings.

Figure 2: M-Banking Acceptance Model (R^2=83.8%)



The notion that consumer attitude influences behavioural intention has been well established in literature pertaining to the adoption of technology-based self-services (TBSS) such as M-Banking (e.g. Dabholkar and Bagozzi, 2002; Luarn and Lin, 2005; Rao and Troshani, 2007). In line with previous empirical research, the findings of this study (Refer to Figure 2) indicate that attitude does mediate the relationship between perceived usefulness, perceived risk, perceived cost, compatibility and intention to use M-Banking. However, the conditions for full mediation are only met for one variable, perceived risk. This study also builds on the body of research which has found a significant positive relationship between attitude and intention (e.g. Bouwman, Carlsson, Molina-Castillo and Walden, 2007; Curran and Meuter, 2005; Nysveen, Pedersen and Thorbornsen, 2005; Pedersen, 2005) given that the standardised path between these two constructs is fairly strong and significant (β=.269, P<0.5). This

supports the fundamental proposition by Fishbein and Ajzen's (1975) Theory of Reasoned Action: that people want to perform behaviour that is in accordance with their attitudes.

In relation to H_3, perceived usefulness (PU) is only partially mediated by attitude (β=.089, P<0.5) and has a positive direct effect on intention to use M-Banking (β=.318, P<0.5). PU has been shown in previous research to a direct effect on behavioural intention through goal achievement and rewards, which are independent to the users' attitude toward the behaviour (Davis, Bagozzi and Warsaw, 1989; Nysveen, Pedersen and Thorbornsen, 2005). On the other hand, the results of H_4 (β=.023, P=.444) are in contrast to previous findings which demonstrate a positive relationship between perceived use of use (PEOU) and intention to use M-Services (Hung, Ku and Chang, 2003; Pagani, 2004; Wang, Lo and Fang, 2008). It appears that Australians' previous experience with ATMs, phone banking, and Internet banking may have created high levels of perceived self efficacy towards self-service banking technologies (SSBT) in general. This is plausible given the link between previous experience with related technologies, self efficacy and PEOU (Hasan, 2008; Venkatesh and Davis, 2007). As such, it seems that Australian consumers feel confident in their ability to learn how to use the M-Banking system regardless of its ease of use, based on their prior experience with SSBT.

Need for interaction with a service employee was also not found to be significant in influencing consumers' usage intentions towards M-banking (β=-.036, P=.157). This confirms the results of Curran and Meuter's (2005) study across other SSBTs. In this case, this finding may have been influenced by the Australian banking industry's history of infusing technology with the service encounter and its usage of multiple technologies including ATMs, phones, and the Internet. In this way, it appears that using SSBT in the banking context rather than dealing with service personnel has become a societal norm as opposed to a motivating or inhibiting factor of future SSBT adoption. Further, perceived risk (β=-.056, P<.05) and perceived cost (β=-.124, P<.05) were both found to have a significant negative effect on intention to use M-Banking. This suggests that the higher the consumer's belief regarding the likelihood of suffering a loss as a result of using M-Banking, the lower the probability that they will intend to use M-Banking. Lastly, in line with expectations, this research found that the second strongest positive relationship in the model is between compatibility and intention to use M-Banking (β=.295, P<.05), as well as a comparatively strong indirect effect on usage intentions through attitude formation (β=.103, P<.05). This indicates that the extent to which consumers believe that M-Banking can be integrated into their daily routine positively influences their intention to use M-Banking.

Contributions and Conclusion

Customer acceptance of M-Banking has received limited attention in the marketing literature despite the discrepancy between predicted and actual adoption of this value-adding SSBT. This research provides support for the use of a revised version of Curran and Meuter's (2005) SST Attitude/Intention Model to explain and predict consumers' intentions to use M-Banking within an Australian context. Namely, perceived usefulness, compatibility, perceived risk, perceived cost and attitude were identified as primary determinants of consumers' intention to use M-Banking. In the immediate context, this research addresses a gap in marketing literature and can also be used by financial service marketers to maximise consumer adoption of M-Banking. Importantly, this research also provides a model for examining future mobile digital technology developments in the financial services sector as "Australians move out of the bank queue and into the electronic age" (Osbourne, 2008, p. 1).

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